GLAUCOMA AND CATARACT PROGRESSION. ONE EQUATION CONTAINING TWO VARIABLES

PROGRESIÓN DEL GLAUCOMA Y DE LA CATARATA. UNA ECUACIÓN Y DOS INCÓGNITAS

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Glaucoma and cataracts, which usually appear in the same age bracket (a period of life which has the bad habit of aggregating problems), are not thoroughly researched diseases.

Professor Murube, who is our president and also my teacher, talks about «the soldier’s wound» as a frequently superficial process due to the resistance of the body. With the passage of time and the onset of aging, the body’s defenses give way and problems accumulate, including glaucoma and cataracts.

Chronic open angle glaucoma is a disease with a clearly disagreeable name and irreversible evolution. For the time being, we are satisfied with trying to stop its advance and in some cases halt it altogether, accommodating its evolutionary curve to the patient’s expectations. Our mission is to remain vigilant to preserve useful eyesight for the rest of the patient’s life. This seems a bleak outlook for our work but truly realistic.

We know that cataracts are reversible in the majority of cases, but the coincidence of both diseases frequently complicates our assessment of the glaucoma patient’s stability. Apparently, the procedures for measuring the progression of visual field defects in glaucoma are easily influenced by said coincidence. Trend analyses carry out a mathematical measurement (generally linear regression) of the retinal sensitivity reduction in time (1). However, said reduction could originate in both diseases, thus making it apparently impossible to distinguish the relative contribution of each. For this reason, many authors prefer to watch for the appearance of glaucoma characteristic events, independently of the global evolution of retinal sensitivity. This approach gave rise to what is known as «events analysis».

The advocates of said procedures have engaged in harsh criticism of each other for years. The Institute of Ophthalmology group of London’s University College, who developed a program called «Progressor» based on regression analysis, has stated it is capable of detecting evolution considerably earlier than the events program of the Swedish group (2). The latter has counterattacked with irony, stating that the English program is an excellent procedure for detecting cataracts and that its high sensitivity must be the consequence of its low specificity (3).

Just like in so many debates, truth is not fully on anyone’s side, although from the beginning my sympathies leaned towards the English group. Events analysis would be a great procedure if the visual field defects were stable and essentially focal, but in fact they are terribly fluctuating so that two or three basal visual field are not enough to interpret subtle changes in the patient’s future. In turn, focality is evident in advanced glaucoma but no so in its early stages, which has led to the interpretation that the perimetric defect is late.

The London group was successful in its attempts to correct said instability by means of mathematical filters which improve the interpretation of local perimetric defects but do not modify the general tendency to loss of sensitivity in time. Therefore, the mean defect would grow in a manner which is undistinguishable for cataracts and glaucoma.

Dr. Díaz Alemán, one of our collaborators, has recently analyzed several of the above mentioned programs in Aberdeen under the direction of our colleague Dr. Azuara-Blanco. His study allows for the conclusion that the experts’ experience is more

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coincident and sensitive when interpreting progression than the events analysis programs, whereas the regression analysis programs are usually more generous in the interpretation of progression. Is this generosity the result of their greater sensitivity or, on the contrary, the consequence of confusing progression of cataracts and progression of glaucoma?

Another recent work observed that the change in mean defect after the cataracts operation is insignificant (4). Consequently, it can be deduced that the majority of the diffuse progression cases detected by regression analysis programs in glaucoma subjects (which usually indicate losses beyond indicated values) do not correspond to cataracts.

We have developed a tendency analysis program with the ability to report the diffuse or focal character of the progression (5). We have seen that experts detect mainly focal defect but both these and events analysis programs do not consider diffuse defects as progression.

For years we have defended the loss variance (PSD in the Humphrey perimeter) as an early diagnostic method, prior to focal defect. New research such as OHTS are proving us right. In like manner, focal defects are not the best indicators for detecting early progression. Before the emergence of «events» or evident focal progressions, glaucoma expresses as a diffuse loss, certainly not always easy to differentiate from cataracts evolution. Only in relatively advanced glaucoma cases the focal character of progression is evident, and this gives rise to the extended idea about the incapacity of perimetry to produce an early progression diagnostic.

However, in a preliminary progression research carried out in the Complutense University covering over 1,000 glaucomatous eyes, in which professors García Sánchez and García Feijoó allowed me to collaborate, it was seen that over 90% of subjects with significant sensitivity reduction lose over 0.5 dB per year. Accordingly, the magnitude of this loss exceeds that which can be expected from cataracts despite that an evident focality cannot be observed.

The logical conclusion is that, if we follow the condition of the lens, the loss of sensitivity will provide early information about the glaucomatous progression. Particularly when the perimetric defect is small, variance is relatively high and the patient does not exhibit dense cataracts, the perimetric deterioration must be interpreted as something more than a simple suspicion of glaucomatous progression, although the focality of the progression of said defects is not evident.

REFERENCES